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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/825,839

04/15/2004

Lee Teck Kheng

MI22-2460

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WELLS ST. JOHN P.S.
601 W. FIRST AVENUE, SUITE 1300
SPOKANE, WA 99201

EXAMINER

LE, THAO X

ART UNIT

PAPER NUMBER

2814

MAIL DATE

DELIVERY MODE

06/20/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/825,839	KHENG, LEE TECK	
	Examiner	Art Unit	
	Thao X. Le	2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-4, 7, 8 and 57-61 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2-4, 7, 8 and 57-61 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 April 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>4/12/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/12/07 has been entered.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Drawings

3. The drawings were received on 4/12/07. These drawings are acceptable.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 4, 7, and 60 are rejected under 35 U.S.C. 102(b) as being anticipated by US 6218731 to Huang et al.

Regarding claims 4 and 7, Huang discloses a semiconductor package in fig. 3, comprising a interposer 100 construction containing only a single dielectric support member 104, col. 3 line 43, and comprising a plurality copper conductive circuit traces 102/105, col. 3 lines 47-50, contacting the single dielectric support member 104, a semiconductor die 116, col. 3 line 55, electrically connected with at least one of the traces 105; at least one of the circuit traces 102, col. 3 line 49, being between the semiconductor die 116 and the dielectric support member 104; the dielectric support member 104 having a first surface and an opposing second surface, fig. 3, the plurality of the circuit traces 105 being over the first surface, fig. 3, openings 112, col. 3 line 52, extending through the second surface to at least some of the circuit traces 105; contact pads 108/120, col. 4 line 61 and col. 3 line 65, within one or more of the openings 112 and in electrical connection with one or more of the circuit traces 105, the contact pads 108 being entirely contained within the openings; wherein an entirely at least one of the contact pads 120 is elevationally spaced from at least one of the first and the second surfaces of the dielectric support member, fig. 3, and solder balls 128, fig. 3, in electrical connection with the contact pads.

Regarding claim 60, Huang discloses the semiconductor package further comprises an adhesive structure 122, col. 3 line 62, directly contacting the plurality of

the circuit traces and directly contacting the semiconductor die, the adhesive structure comprising dielectric material.

6. Claims 2-4, 7-8, 57-59, and 61 are rejected under 35 U.S.C. 102(a) as being anticipated by Applicant Admitted Prior Art (AAPA).

Regarding claim 7, AAPA discloses a semiconductor package in fig. 1, comprising an interposer construction containing only a single dielectric support member 20, and comprising a plurality of conductive circuit traces 17, contacting the single dielectric support member 20, a semiconductor die 12, electrically connected with at least one of the traces 17; at least one of the circuit traces 17 being between the semiconductor die 12 and the dielectric support member 20; the dielectric support member 20 having a first surface and an opposing second surface, fig. 1, the plurality of circuit traces 17 being over the first surface, fig. 1, openings extending through the second surface to at least some of the circuit traces 17, fig. 1; contact pads 30, within one or more of the openings and in electrical connection with one or more of the circuit traces 17, the contact pads 30 being entirely contained within the openings, fig. 1, wherein an entirety of at least one of the contact pads is elevationally spaced from at least one of the first and the second surfaces of the dielectric support member 20 (32/34 at 40/42); and solder balls 36, in electrical connection with the contact pads 30.

Regarding claims 2-3, AAPA Hashimoto discloses the semiconductor package wherein the support member 20 is a photomask material (polyimide) or not a photomask material (electrically insulative), specification [0004], wherein the one or more circuit traces 12/14/16 comprises copper, col. 5 line 26.

Regarding claim 8, AAPA discloses the semiconductor package wherein the dielectric support member 20 has a slit 50 extending therethrough; the electrical connection of the semiconductor die 12 to said at least one of the circuit traces 17 includes one or more wire bonds 44, extending from the die 12, through the slit, and into at least one of the openings, fig. 1.

Regarding claims 57-59, APA discloses the semiconductor package wherein the entirety of the at least one contact pad 30 is elevationally spaced from the first surface of the dielectric support member 30, wherein the entirety of the at least one contact pad is elevationally spaced from the second surface of the dielectric support member, wherein the entirety of the at least one contact pad is elevationally spaced from both of the first and the second surfaces of the dielectric support member.

Regarding claim 61, AAPA discloses the semiconductor package wherein the at least one contact pad comprises at least two conductive layers 32/34, fig. 1.

Claim 60 (new): The semiconductor package of claim 7 further comprising an adhesive structure directly contacting the plurality of the circuit traces and directly contacting the semiconductor die, the adhesive structure comprising dielectric material.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of US 6486544 to Hashimoto.

Regarding claim 4, AAP discloses the claimed invention, except the circuit traces comprises copper.

However, the circuit traces comprises copper on an insulative substrate is typical and well known in the art as disclosed by Hashimoto in col. 5 line 26.

Conclusion

9. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X. Le whose telephone number is (571) 272-1708. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on (571) 272 -1705. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

15 June 2007



THAO X. LE
PRIMARY PATENT EXAMINER

